Paper No. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PAVEL VORACEK

Appeal No. 1997-2627
Application No. 08/424,122

ON BRIEF

Before KIMLIN, OWENS and PAWLIKOWSKI, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the examiner's final rejection of claims 10-18, which are all of the claims remaining in the application.

THE INVENTION

Appellant claims a device for electrical treatment of an electrolytic solution, and claims solution fractions obtained using this device. Claims 10 and 13 are illustrative:

10. A device for electrical treatment of an electrolytic solution, said device comprising:

an electrically non-conducting container;

an electrolytic solution placed within said container, said solution having a pH of between 6 and 8;

a first chemically solid positive electrode located in said container;

a second chemically solid negative electrode located in said container;

a source of direct current voltage electrically connected to said electrodes, said direct current voltage source having a virtual value of 50-500 V; and

a thin membrane located in said container between said electrodes, said membrane having a thickness of 5-50Fm, being made of a material having a very small specific electrical conductivity which is of the same magnitude as the specific electrical conductivity of high density polyethylene when immersed in said electrolytic solution, and dividing said electrolytic solution into a first volume containing said positive electrode and a second volume containing said negative electrode, wherein application of said direct current voltage to said electrodes creates a considerably increasing potential gradient within said membrane to cause ions to flow between said first volume and said second volume and wherein said membrane maintains said pH of said electrolytic solution at a substantially constant value.

13. Solution fraction for dampening metabolism and reproduction of biological material, said solution fraction being prepared by the method that comprises placing an electrolytic water solution with a low salt content and having

a pH between 6 and 8 in an electrically non-conducting container (2) in which are located two chemically solid electrodes (3,4), of which the first one (3) is positive electrode and the second one (4) is negative electrode, in that between the electrodes (3,4) is located a thin membrane (5), made from material having a very small specific electrical conductivity which is of the same magnitude as the specific electrical conductivity for High Density Polyethylene when immersed in said electrolytic solution and having a thickness of 5-50 Fm, which membrane (5) divides the electrolytic solution (1) into two separated volumes (7,8) of which the first volume (7) contains the positive electrode (3) and the second volume (8) contains the negative electrode (4); applying a direct-current voltage (6) on said electrodes (3,4) during a time of 3-20 minutes; and wherein application of said direct current voltage creates a considerably increasing potential gradient within said membrane to cause ions to flow between said first volume and said second volume and wherein said specific electrical conductivity is such that the resulting pH of said first volume (7) is the same as the pH of the said electrolytic solution at the start of said method and thereby obtaining volume (7) as said fraction.

THE REFERENCE

Moeglich (Moeglich ‘475) 4,361,475 Nov. 30, 1982

THE REJECTION

Claims 10-18 stand rejected under 35 U.S.C. § 103 as being unpatentable over Moeglich ‘475.

OPINION

We have carefully considered all of the arguments advanced by appellant and the examiner and agree with

appellant that the aforementioned rejection is not well founded. Accordingly, we reverse this rejection.

Appellant's apparatus claims 10-12 require that a thin membrane separates an electrolytic solution into two volumes and is made of a material having a specific electrical conductivity which is the same magnitude as that of high density polyethylene when immersed in the electrolytic solution. Solution fraction claims 13-18 recite solution fractions which are made by operating a device having such a membrane.

Moeglich '475 discloses three membrane structures: 1) the capillary membrane assembly (10) shown in figures 1-4, 2) the film membrane assembly described in U.S. 4,124,458 to Moeglich (Moeglich '458), which is incorporated by reference in Moeglich '475 (col. 2, lines 38-41), and 3) the sandwich membrane (29) illustrated in figure 5b (col. 7, lines 9-15).

The capillary membrane assembly (10) in figures 1-4 has layers of capillary material (11) which form capillary channels that allow passage of anions and cations therethrough and are interposed with separation layers (13) of inert, impermeable material having a high dielectric constant, e.g.,

polyethylene (col. 5, lines 35-56). The disclosed suitable polyethylene separation layer thickness is 0.001 inch (25Fm) (col. 5, line 56). Anion and cation transport across the capillary membrane assembly takes place in dimension A in figure 1, but ion and water transport do not take place across separation layers 13 in dimension B in this figure (col. 5, lines 46-50). As shown in figures 2 and 3, the separation layers are parallel to the surface of the liquid and, therefore, do not separate the liquid into two volume fractions. Consequently, for at least this reason, the Moeglich ‘475 capillary membrane assembly is not within the scope of appellant’s claims.

The membrane assembly disclosed in Moeglich ‘458 includes a 1Fm or thicker film of a material,[1] e.g., polyethylene, which itself is practically impermeable to the passage of ions in solution but which is rendered ion permeable by placing a porous layer in tight or loose contact with the film, coating the film, or surface treating the film to render it porous (col. 2, lines 10-18 and 55-68). Moeglich ‘458 discloses that

[1] The preferred film thickness ranges are 5-10Fm and 10-50Fm (col. 2, lines 55-57; col. 4, lines 11-12).

it has been unexpectedly found that a polyethylene film which will pass no current when used alone in an electrochemical cell will pass up to one amp or more per square centimeter when provided with the disclosed porous layer, coating or surface treatment to form the membrane assembly (col. 3, lines 37-47). It is this membrane assembly, rather than the polyethylene film alone, which Moeglich ‘475 states can be used in the disclosed apparatus (col. 7, lines 13-15). The examiner has not explained, and it is not apparent, why this membrane assembly, which will pass up to one amp or more per square centimeter, has a specific electrical conductivity which is the same magnitude as that of high density polyethylene when immersed in the electrolytic solution.

The Moeglich ‘475 sandwich membrane (29) in figure 5b has a film membrane (28) which is as shown in Moeglich ‘458 and is composed of substantially water impermeable, ion impermeable insulating material, particularly polyethylene, having a thickness of about 0.001 to 1 mm (1-1000Fm) (col. 6, lines 56-61). Moeglich ‘475 teaches that the film membrane 28 is disposed substantially perpendicular to the direction A (figure 5b) of ion transport across the capillary membrane

assemblies (10) of sandwich 29 (col. 6, lines 65-68). Film membrane 28, therefore, must be ion permeable in order for ions to pass through the capillary membrane assemblies. For the film membrane to be ion permeable, according to Moeglich ‘458, it cannot be a polyethylene film alone, because the polyethylene film itself, the reference teaches, is practically impermeable to the passage of ions in solution (col. 2, lines 10-18). Consequently, the film membrane referred to in Moeglich ‘475 must be the Moeglich ‘458 film membrane assembly, i.e., a polyethylene layer which is coated, surface treated, or placed in contact with a porous layer. This film membrane assembly, unlike polyethylene, will pass up to one amp or more per square centimeter in an electrolytic cell (Moeglich ‘458, col. 3, lines 37-47). The examiner has not established that a membrane assembly which will pass up to one amp or more per square centimeter has a specific electrical conductivity which is the same magnitude as that of high density polyethylene when immersed in the electrolytic solution.

The examiner argues that Moeglich ‘475 discloses (col. 2, lines 29-34) a non-conducting plastic film, preferably

polyethylene (answer, pages 3-4). This film, however, as discussed above, is parallel to the direction of ion flow in the Moeglich ‘475 capillary assembly 10, and, when the film is part of sandwich membrane 29 or the Moeglich ‘458 film assembly, it is rendered ion permeable by a method which increases its electrical conductivity.

The examiner argues that Moeglich ‘475 teaches (column 5, lines 24-35) that the polyethylene film is thin enough that it allows passage of ions therethrough (answer, pages 4-5). The portion of the reference relied upon by the examiner, however, pertains to the capillary material rather than to the polyethylene separation layers. Moeglich ‘475 does not disclose that the capillary layers can be polyethylene films (col. 5, lines 22-27).

As for solution fraction claims 13-18, the examiner points out that these claims are in product-by-process form and that what is claimed is a product, not a process (answer, page 5). The examiner, however, does not explain why the product recited in appellant’s claims 13-18 would have been fairly suggested to one of ordinary skill in the art by Moeglich ‘475.

For the above reasons, we conclude that the examiner has not carried the burden of establishing a *prima facie* case of obviousness of the invention recited in either appellant's apparatus claims or solution fraction claims.

DECISION

The rejection of claims 10-18 under 35 U.S.C. § 103 over Moeglich ‘475 is reversed.

REVERSED

EDWARD C. KIMLIN Administrative Patent Judge	)
TERRY J. OWENS Administrative Patent Judge	) BOARD OF PATENT APPEALS AND INTERFERENCES
BEVERLY A. PAWLIKOWSKI Administrative Patent Judge	)

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